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P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER	
SHAH, CHIRAG G	

ART UNIT	PAPER NUMBER
2616	

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/923,868	LOGUINOV, DMITRI	
	Examiner	Art Unit	
	Chirag G. Shah	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-10, 12-28 and 30-40* is/are rejected.

7)☒ Claim(s) *4,11 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Argument Page 7, filed 3/3/06, with respect to the rejection(s) of claim(s) 19,20 and 25 under 102 (e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ginossar (U.S. Patent No. 6,477,143).

Claim Objections

2. Claim 40 objected to because of the following informalities: Claim 40, line 5 includes "=", which must be removed. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 19, 20 and 25 rejected under 35 U.S.C. 102(e) as being anticipated by Ginossar (U.S. Patent No. 6,477,143).

Referring to claim 19, Ginossar discloses in claim 1 of a system for providing congestion control **[a system for sensing network congestion; see, col. 11, lines 16-40 and fig. 1]** in a communications network by adjusting a sender rate between at least one sender node and destination node **[as disclosed in col. 13, lines 65 to col. 14, lines 13 and col. 19, lines 27-35, where the sender node adjusts the transmission rate size of the data segments]**, comprising:

means for transmitting a plurality of data transmission from said source node to said destination node **[as disclosed fig. 1 and col. 11, lines 42-65, the sender transmits a stream of packets to the plurality of receivers]**;

means for determining a bandwidth capacity of said network **[see, col. 12, lines 15-35, the level of congestion severity is sensed by the router for each direction and each network route]**;

means for generating congestion feedback information based on the determined bandwidth capacity of said network to determine a congestion state **[see col. 13, lines 53-65, the router 18 adds congestion information to the packet on its way to the receiver, the receiving node copies the congestion information into an acknowledgement packet and feedback the acknowledgement packet to the sending node]** and,

means for adjusting said sender rate at which said source node is currently transmitting the data based on said congestion feedback information, the adjusted rate being a function of the determined the bandwidth capacity of said network **[see col. 13, lines 60 to col. 14, lines 14, where the sending node, upon receipt of the congestion information, adjusts the size/rate of the data segments transmitted in accordance with the congestion severity level indicated by the router]** as claim.

Referring to claim 20, Ginossar discloses in col. 13, lines 53 to col. 14, lines 14 further comprising means (sender) for utilizing said congestion feedback information [the acknowledgement packet received from the receiving node] to determine the congestion state in said network [based on the feedback, the sender determines how to adjust the size/rate of transmission for the stream of packets] as claim.

Referring to claim 25, Ginossar discloses wherein the congestion feedback information (acknowledgment packet from receiver to the sender) is provided by at least one of the source node (node 10, figure 1) and the destination (node 12, figure1) node [congestion feedback is provided by the destination receiver node, see, fig. 1 and col. 13, lines 53 to col. 14, line 14].

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3, 5, 8-10, 14-16, 21-23, 26-28, 30, 33-34, 36-37 and 40 rejected under 35 U.S.C. 103(a) as being unpatentable over Ginossar (U.S. Patent No. 6,477,143) in view of Gupta et al. (U.S. Patent No. 6,577,599), hereinafter Gupta.

Referring to claims 1 and 26, Ginossar discloses in claim 1 of a system for providing congestion control **[a system for sensing network congestion; see, col. 11, lines 16-40 and fig.**

1] in a communications network by adjusting a sender rate between a sender node and a destination node **[as disclosed in col. 13, lines 65 to col. 14, lines 13 and col. 19, lines 27-35, where the sender node adjusts the transmission rate size of the data segments]**, comprising:

a memory [memory is inherent within a router 18, see fig. 1 and col. 11, lines 16-25] for storing a computer-readable code [the router inherently includes a memory having computer-readable codes for sensing congestion, see col. 11, lines 16-25]; and,

a processor operatively coupled to the memory [the router 18 calculates the maximum segment size that may be sent by the sending node without aggravating congestion for each direction, clearly suggesting that the router must include a processor for executing computer readable codes from the memory to utilize such functionality, see fig. 1 and col. 123, lines 23-35], the processor configured having the method comprising the steps of:

(a) transmitting a plurality of serial data transmission from a source node to a destination node **[as disclosed fig. 1 and col. 11, lines 42-65, the sender transmits a stream of packets to the plurality of receivers]**;

(b) determining whether a congestion occurs in said network **[see, col.11, lines 65 to col. 12, lines 52 and col. 13, lines 53-65, router operatively determines and investigates whether there is a non-zero congestion severity level on the network router in the direction along each network route]**;

(c) determining a bandwidth capacity of said network **[see, col. 12, lines 15-35, the level of congestion severity is sensed by the router for each direction and each network route]**;

Ginossar discloses in col. 13, lines 65 to col. 14, lines 12 of adjusting the size/rate of transmission for the stream of packets in response to the acknowledgement feedback information

for example, if the congestion severity level increases, the size of the data segment decreases accordingly. Ginossar, however fails to explicitly disclose,

(d) adjusting a sender rate at which said source is currently transmitting the data according to a function of the determined bandwidth capacity if no congestion occurs; and,

(e) adjusting said sender rate of said source node according to a second function if congestion occurs.

Gupta discloses in fig. 3 and in col. 11, lines 26-39 that the transmission rate is adjusted according to the feedback data-loss (congestion) responses received, for example, if no/low data-loss (occurs due to no congestion) occurs and an adjustment may be made, to cause the transmission of greater number of packets from a sender to the receiver, this adjustment is based on the determined bandwidth capacity such as monitoring one or more responses from the receivers, see claim 1. Gupta further discloses in col. 11, lines 26-39 that if the packet-loss rate is high (occurs due to congestion), the necessary adjustments need to be made to the transmission rate, so that the packet-loss rate is reduced by reducing the number of packets transmitted being the second function.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Ginossar to include the steps of adjusting the sender rate based on the condition of congestion such as packet loss as taught by Gupta in order to achieve optimal data transmission rate and to minimize the failure states associated with an over congested network bandwidth.

Referring to claims 9 and 33, Ginossar discloses a machine-readable medium [memory is inherent within a router 18, see fig. 1 and col. 11, lines 16-25] having stored thereon data representing sequence of instructions, and the sequences of instructions [the router inherently includes a memory having computer-readable codes for sensing congestion, see col. 11, lines 16-25 \] which, when executed by a processor to cause the processor to provide congestion control in a communications network [the router 18 calculates the maximum segment size that may be sent by the sending node without aggravating congestion for each direction, clearly suggesting that the router must include a processor for executing computer readable codes from the memory to utilize such functionality, see fig. 1 and col. 123, lines 23-35], the method comprising the steps of:

(a) transmitting a plurality of serial data transmission from a source node to a destination node **[as disclosed fig. 1 and col. 11, lines 42-65, the sender transmits a stream of packets to the plurality of receivers];**

(b) monitoring a sending rate at which said source node is currently transmitting data to said network and a current rate at which said destination node is currently receiving data to determine whether a congestion state occurs **[see, col.11, lines 65 to col. 12, lines 52 and col. 13, lines 53-65, router operatively determines and investigates whether there is a non-zero congestion severity level on the network router in the direction along each network route]** and,

Ginossar discloses in col. 13, lines 65 to col. 14, lines 12 of adjusting the size/rate of transmission for the stream of packets in response to the acknowledgement feedback information for example, if the congestion severity level increases, the size of the data segment decreases

accordingly. Ginossar, however fails to explicitly disclose of: if no congestion state occurs, determining the bandwidth capacity of the network and increasing the sender rate of the source node according to a first function of the determined bandwidth capacity and if a congestion state occurs, decreasing the sender rate of the source node according to a second function.

Gupta discloses in fig. 3 and in col. 11, lines 26-39 that the transmission rate is adjusted according to the feedback data-loss (congestion) responses received, for example, if no/low data-loss (occurs due to no congestion) occurs and an adjustment may be made, to cause the transmission of greater number of packets from a sender to the receiver, this adjustment is based on the determined bandwidth capacity such as monitoring one or more responses from the receivers, see claim 1. Gupta further discloses in col. 11, lines 26-39 that if the packet-loss rate is high (occurs due to congestion), the necessary adjustments need to be made to the transmission rate, so that the packet-loss rate is reduced by reducing the number of packets transmitted being the second function.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Ginossar to include the steps of adjusting the sender rate based on the condition of congestion such as packet loss as taught by Gupta in order to achieve optimal data transmission rate and to minimize the failure states associated with an over congested network bandwidth.

Referring to claim 22, Ginossar discloses in claim 1 of a system for providing congestion control **[a system for sensing network congestion; see, col. 11, lines 16-40 and fig. 1]** in a communications network by adjusting a sender rate between at least one sender node and

destination node **[as disclosed in col. 13, lines 65 to col. 14, lines 13 and col. 19, lines 27-35, where the sender node adjusts the transmission rate size of the data segments]** comprising:

means for transmitting a plurality of data transmission from said source node to said destination node **[as disclosed fig. 1 and col. 11, lines 42-65, the sender transmits a stream of packets to the plurality of receivers]**;

means for determining a bandwidth capacity of said network **[see, col. 12, lines 15-35, the level of congestion severity is sensed by the router for each direction and each network route]**;

means for generating congestion feedback information based on the determined bandwidth capacity of said network to determine a congestion state **[see col. 13, lines 53-65, the router 18 adds congestion information to the packet on its way to the receiver, the receiving node copies the congestion information into an acknowledgement packet and feedback the acknowledgement packet to the sending node]** and,

means for adjusting said sender rate at which said source node is currently transmitting the data based on said congestion feedback information, the adjusted rate being a function of the determined the bandwidth capacity of said network **[see col. 13, lines 60 to col. 14, lines 14, where the sending node, upon receipt of the congestion information, adjusts the size/rate of the data segments transmitted in accordance with the congestion severity level indicated by the router]**.

Ginossar fails to disclose if no congestion occurs, the adjusting means increase the number of packets transmitted by the source node at a first rate and at a second rate if a predetermined range of the bandwidth capacity of the network is utilized. Gupta discloses in col.

11, lines 28-39 wherein, if no congestion occurs, said adjusting means increase the number of packets transmitted by said source node at a first rate and at a second rate [adjustments in rates, are continued until an optimal data transmission rate is achieved] if a predetermined range of the bandwidth capacity of said network is utilized. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Ginossar to include the steps of adjusting the sender rate based on the condition of congestion such as packet loss as taught by Gupta in order to achieve optimal data transmission rate and to minimize the failure states associated with an over congested network bandwidth.

Referring to claim 40, Ginossar discloses that a sender node in the network includes a congestion controller based on the following, the source node being configured for currently transmitting the data towards a destination node at a sender rate that is controlled by the controller [see col. 11, lines 42-65, sending node transmits to the other a basic data segment not exceeding the size that the receiving node wishes to receive], the sender processor sends a stream of packets from the sending node to a plurality of destination, receiver nodes **[see fig. 1 and col. 11, lines 42-65, the sender transmits a stream of packets to the plurality of receivers]**; the router nodes monitors the sending rate and determines that a congestion condition has occurred, enabling the destination receiver node to send an acknowledgement feedback information to the sender and the sender processor adjusting the rate/size of transmission for the stream of packets in response to the acknowledgment feedback information and as disclosed the sender adjusts transmission size/rate (a predetermined criteria) if the feedback information indicates that some receivers experienced congestion while receiving packets [see col. 12,lines 23-53 and col. 13,

lines 45 to col. 14,lines 13]. *Ginossar explicitly fails to disclose that is dictated by a first function of a currently determined bandwidth capacity of the network if it is determined that no congestion is occurring in the network, the controller being configured for adjusting a rate for currently transmitting the data toward the destination node according to a second function if the determination is that congestion is occurring in the network.*

Gupta discloses in fig. 3 and in col. 11, lines 26-39 that the transmission rate is adjusted according to the feedback data-loss (congestion) responses received, for example, if no/low data-loss (occurs due to no congestion) occurs and an adjustment may be made, to cause the transmission of greater number of packets from a sender to the receiver, this adjustment is based on the determined bandwidth capacity such as monitoring one or more responses from the receivers, see claim 1. Gupta further discloses in col. 11, lines 26-39 that if the packet-loss rate is high (occurs due to congestion), the necessary adjustments need to be made to the transmission rate, so that the packet-loss rate is reduced by reducing the number of packets transmitted being the second function.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Ginossar to include the steps of adjusting the sender rate based on the condition of congestion such as packet loss as taught by Gupta in order to achieve optimal data transmission rate and to minimize the failure states associated with an over congested network bandwidth.

Referring to claims 2 and 27, Gupta discloses in figure 3 and in col. 11, lines 35-39 wherein said adjusting step (d) according to said first function includes increasing the number of packets transmitted by said source node as claim.

Referring to claims 3, 10 and 28, Gupta discloses in figure 3 and col. 111, lines 28-34 wherein said adjusting step (e) according to said second function includes decreasing the number of packets transmitted by said source node as claim.

Referring to claim 5 and 30, Gupta disclose in col. 11, lines 26-39 that if the packet-loss rate is high (occurs due to congestion), the necessary adjustments need to be made to the transmission rate, so that the packet-loss rate is reduced by reducing the number of packets transmitted being the second function.

Referring to claims 8, 14 and 36, Ginossar discloses section below, wherein said data flow from said source node is simultaneously transmitted to multiple destination nodes and the bandwidth capacity is determined for each of the data flow transmitted to each of the multiple destination nodes [see col. 12, lines 23-35, the router 18 of figure 1 calculates the maximum segment size that may be sent by the sending node in a given direction along the network and updates the level of congestion severity for each direction along each network path] as claim.

Referring to claim 15, Gupta discloses in the abstract and in figure 2 of monitoring transmission and response rates. Thus, a congestion state occurs [which results in high data loss] if the rate permitted by said destination (receiver) node exceeds the capacity of said source node.

Referring to claims 16 and 37, Gupta discloses in col. 11, lines 28-39 and abstract wherein said steps of increasing and decreasing said sender rate above and below an operating point for said network provide a maximum throughput at minimum delay time.

Referring to claim 21, Ginossar discloses in fig. 1 and col. 13, lines 45 to col. 14, lines 13, the receiver nodes generates an acknowledgement congestion feedback signal based on the router monitoring of congestion condition and sends the acknowledgement feedback message to the sender if there is congestion at any of the receivers. Ginossar fails to disclose a means for monitoring said sending rate at which said source node is currently transmitting data to said network and a current rate at which said destination node is currently receiving data to generate said congestion control information. Gupta discloses in figure 2 and in col. 8, step 230 of monitoring transmission and response rates. Both rates as disclosed are analyzed to detect lost information packet and to determine an efficient method for their retransmission. Gupta further discloses in col. 8, lines 65-67, one or more receivers submit data-loss via control data or feedback responses to the sender. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the teachings of Ginossar to include monitoring transmission and response rates as taught by Gupta in order to control traffic

bandwidth and provide a proper analysis of transmission rates that enable transmission rates to be adjusted to reduce packet-loss.

Referring to claim 23, Gupta discloses in col. 11, lines 28-34 wherein adjusting means decrease the number of packets transmitted by the source node at a predetermined rate if congestion occurs.

Referring to claims 34, Gupta discloses in figure 3 and in col. 11, lines 28-39 wherein any adjustment of said sender rate operates to establish a maximum data transmission rate and constant packet loss.

7. Claims 6-7, 12-13, 17-18, 24, 31-32, 35, 38 and 39 rejected under 35 U.S.C. 103(a) as being unpatentable over Ginossar in view of Gupta as applied to claims above, and further in view of Applicant admitted art on pages 2 and 3.

Referring to claims 6, 12, 24, and 31, Ginossar in view of Gupta fails to disclose of the in calculating the second function, calculating the sender rate raised to a power exceed unity. Applicant admitted prior art on page 2-3, equation (3): fd(x)=Bx^l including a second function raised to a power exceed unity. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Ginossar in view of Gupta to include calculating the sender rate raised to a power exceed unity as taught by Applicant Admitted Prior Art in order to keep

network load at an optimal capacity by limiting the load on the network by properly adjusting the sending rates.

Referring to claims 7, 13, 32 and 35, Ginossar in view of Gupta fails to disclose of the in calculating the first function, calculating the sender rate raised to a power exceed unity. Applicant admitted prior art on page 2-3, equation (3): fi(x)=ax^-k including a second function raised to a power exceed unity. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Ginossar in view of Gupta to include calculating the sender rate raised to a power exceed unity as taught by Applicant Admitted Prior Art in order to keep network load at an optimal capacity by limiting the load on the network by properly adjusting the sending rates.

Referring to claim 17 and 38, Ginossar in view of Gupta fails to disclose of the decreasing according to first predetermined criterion sender rate equation as claimed. Applicant admitted prior art on page 2-3, equation (1), (2) and (3) of the specification can be manipulated to provide the claimed equation for the decreasing congestion control scheme. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Ginossar in view of Gupta to include decrease congestion control scheme equation as taught by Applicant Admitted Prior Art in order to keep network load at an optimal capacity by limiting the load on the network by properly adjusting the sending rates.

Referring to claim 18 and 39, Ginossar in view of Gupta fails to disclose of the decreasing according to second predetermined criterion sender rate equation as claimed. Applicant admitted prior art on page 2-3, equation (1), (2) and (3) of the specification can be manipulated to provide the claimed equation for the decreasing congestion control scheme. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Ginossar in view of Gupta to include decrease congestion control scheme equation as taught by Applicant Admitted Prior Art in order to keep network load at an optimal capacity by limiting the load on the network by properly adjusting the sending rates.

Allowable Subject Matter

8. Claim 4, 11 and 29 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G. Shah whose telephone number is 571-272-3144. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 571-272-7682. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs
May 15, 2006

Chirag Shah
Patent Examiner, Division 2616